

Air Pollution Doesn't Increase Risk of Preeclampsia, Early Delivery, Study Finds

ScienceDaily (July 5, 2010) — While pregnant women may worry about the effects of air pollution on their health and that of their developing child, exposure to carbon monoxide and fine particles in the air during pregnancy does not appear to increase the risk of preterm delivery or preeclampsia -- a serious condition that arises only during pregnancy -- according to results of a study headed by a University at Buffalo epidemiologist.

The research was conducted in the region around Seattle, Wash., using data from 3,675 women who were enrolled in the Omega Study, an investigation of the effects of diet and environment on women's health and nutrition before and during pregnancy.

Carole Rudra, PhD, assistant professor of social and preventive medicine at UB and first author on the study, presented the results June 23 at the Society for Pediatric and Perinatal Epidemiology annual meeting held in Seattle June 22-23.

Rudra studies the ways in which the human-made environment and maternal behaviors affect health during pregnancy.

"There is strong evidence that air pollutants may increase risk of cardiovascular disease," says Rudra. "This led me to examine air pollutants in relation to preeclampsia, which is similar to cardiovascular disease and a risk factor for the condition. Pollutants may interfere with delivery of oxygen to the placenta and increase maternal oxidative stress and inflammation. These pathways could lead to both preeclampsia and preterm delivery."

Rudra noted that carbon monoxide levels were fairly high in the Seattle area in comparison with other U.S. cities when she began this research, but have declined significantly in recent years.

Rudra and colleagues collected data from regional air-pollutant-monitoring reports on concentrations of carbon monoxide (CO) and minute airborne particles (such as dust, fumes, mist, smog and smoke) during specific exposure windows at residences of study participants.

The exposure windows were the three months before pregnancy, the total of the first four months of pregnancy, during each trimester and the last month of pregnancy.

Preeclampsia is a condition in which high blood pressure and protein in the urine develop after the 20th week (late second or third trimester) of pregnancy. Symptoms are swelling of the hands, face or eyes, and sudden weight gain. Delivery is the only cure. Preterm delivery was defined for this study as occurring less than 37 weeks of gestation.

Analysis of the data showed that the amount of air pollutant exposure at any of the collection times had no effect on either of the pregnancy problems.

"In this geographic setting and population, these two air pollutant exposures do not appear to increase risks of preeclampsia and preterm delivery," notes Rudra.

She now is planning to examine women's health outcomes in relation to air pollutants in Western New York.

Michelle A. Williams, PhD, professor of epidemiology and global health at the University of Washington, is principal investigator on the Omega Study and a coauthor on the paper. Lianne Sheppard, PhD, Jane Q. Koenig, PhD, and Melissa A. Schiff, MD, MPH, all from UW, also contributed to the research.

The study was funded by the National Institutes of Health.

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